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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,994	10/21/2003	Hiroyuki Yoshida	4255-5	4547

23117 7590 09/20/2007
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EXAMINER

TRINH, THANH TRUC

ART UNIT	PAPER NUMBER
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1753

MAIL DATE	DELIVERY MODE
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09/20/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/688,994	Applicant(s) YOSHIDA ET AL.	
	Examiner Thanh-Truc Trinh	Art Unit 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/2/2007 has been entered.

Claim Objections

1. Claim 7 is objected to because of the following informalities:

Term "such that laminated in order over one or more light-receiving glass surfaces constituting one or more front surfaces there are:" is worded awkwardly. It is suggested that said term be changed to "such that the following layers are laminated in order over one or more light-receiving glass surfaces that constitute one or more front surfaces:"

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 1753

2. Claims 1 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the entire edge portion perimeter" in 19. There is insufficient antecedent basis for this limitation in the claim. Also in claim 1 line 23, the term "somewhat" is a relative term which renders the claim indefinite.

Claim 18 recites the limitation "the sidewalls" in line 3. There is insufficient antecedent basis for this limitation in claim 3 and in claim 1, which claim 18 depends.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3-6, 14 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Stein et al. (US Patent 5071491).

Regarding claim 1, as seen in Figures 1 and 7, Stein et al. disclose a solar cell module edge face sealing member (comprising seal 26 and insulator 27) for sealing one

Art Unit: 1753

or more gaps between at least one of the solar cell module body (glass-plastic composite solar cell equipment 25) and at least one of the frame body (metallic frame 24), wherein the solar cell module body (25) is captured within frame body (24). Stein et al. describe that the seal can coat the entire edge of solar cell module body (See col. 4 lines 5-7) and the insulation 27 functions as to insulate the upper and lower part of the electrical conductive frame 24 (See col. 4 lines 12-24). Therefore, it is the Examiner's position that the edge face sealing member being frame-like in shape (See Figure 7) and formed in substantially parallel fashion with respect to one or more outer shapes of the solar cell module body. The edge face sealing member (combination of seal 26 and insulator 27) is substantially C-shaped in cross section or substantially U-shaped in cross section (See Figure 7). The edge face sealing member comprises upper sealing regions (upper seal 26 in Figure 7) abutting front surface of the solar cell module body (25), lower sealing regions (lower seal 26) abutting back surface of the solar cell module body (25), side sealing regions (insulation 27) abutting the edge face of the solar cell module body (25). (See Figure 7). The upper sealing region and the lower sealing region being disposed so as to open to the outside therefrom at either side from the edge portions of the side sealing region. The edge face sealing member (combination of the seal 26 and the insulation 27) captures the solar cell module body (25) along substantially the entire edge portion perimeter, and is captured within the frame body (24). The edge face sealing member (combination of seal 26 and insulation 27) further comprises tip portions of the upper sealing region and the lower sealing region forming in a bent fashion toward a groove recess, wherein the distance between the tip portions

is substantially the same or less than a thickness of the edge portion of the solar cell module body. (See Figure 7).

Regarding claim 3, Stein et al. disclose the lower sealing region (lower seal 26) is longer than the upper sealing region (upper seal 26). (See Figure 7)

Regarding claim 4, Stein et al. describe the surface of the upper sealing region and the surface of the lower sealing region face each other, and one or more projections are formed on each surface. (See Figure 7).

Regarding claim 5, Stein et al. describe the projections comprise single-rib (upper seal) and multiple-rib (lower seal 26) formed in parallel fashion. (See Figure 7).

Regarding claim 6, Stein et al. describe the tip portions of the upper and lower sealing region disposed in inclined fashion. (See Figure 7).

Regarding claim 14, as seen in Figure 7, Stein et al. disclose a solar cell module comprising a solar cell module body (25) captured within a frame body (metallic frame 24), wherein an edge face sealing member (combination of seal 26 and insulation 27), frame-like in structure, are formed in substantially parallel fashion with respect to one or more outer shape of the solar cell module body. The edge face sealing member is substantially C-shaped or U-shaped in cross section. The edge face sealing member (combination of seal 26 and insulation 27) comprises an upper sealing region (upper seal 26) abutting the front surface of the solar cell module body (25), an lower sealing region (lower seal 26) abutting the back surface of the solar cell module body, a side sealing region abutting the edge face of the solar cell module body. The upper sealing region (upper seal 26) and the lower sealing region (lower seal 26) being disposed so

Art Unit: 1753

as to open to the outside at either side from edge portions of the side sealing region. Stein et al. describe that the seal can coat the entire edge of solar cell module body (See col. 4 lines 5-7) and the insulation 27 functions as to insulate the upper and lower part of the electrical conductive frame 24 (See col. 4 lines 12-24). Therefore, it is the Examiner's position that the edge face sealing member captures the solar cell module body along substantially the entire edge portion perimeter. The edge sealing member (combination of seal 26 and insulation 27) is captured by the frame body (24). (See Figure 7). The edge face sealing member (combination of seal 26 and insulation 27) further comprises tip portions of the upper sealing region and the lower sealing region forming in a bent fashion toward a groove recess, wherein the distance between the tip portions is substantially the same or less than a thickness of the edge portion of the solar cell module body. (See Figure 7 and col. 4 lines 5-24).

Regarding claim 18, Stein et al. disclose projections extending inwardly from an interior surface of each of the sealing regions, wherein the tip portions extend further inwardly than the projections. (See Figure 7).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 7-8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stein et al. (US Patent 5071491) in view of Kataoka et al. (US Patent 6320115).

Stein et al. disclose a solar cell module edge face sealing member or solar cell module as described in claims 1 and 14, wherein the solar cell module body (or glass-plastic composite solar cell equipment 25) comprises glass pane, solar cell, and plastic (See Figure 5 and col. 3 lines 50-65).

Regarding claim 8, Stein et al. also teach the seal 26 can be made of rubber (See col. 4 line 16). It is the Examiner's position that rubber is elastomer resin.

Stein et al. do not teach using EVA (ethylene vinyl acetate) for light-receiving-surface and back-surface sealing resin layers.

Regarding claims 7 and 15, Kataoka et al. teach using EVA for light-receiving-surface and back-surface sealing resin layers (502 and 504). (See Figure 5 and col. 10 lines 48-67 and col. 14 lines 15-57)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the module body of Stein et al. by using EVA for light-receiving-surface and back-surface sealing layers as taught by Kataoka et al., because

it would provide an excellent protection, adhesion, durability. (See col. 10 lines 48-67 and col. 14 lines 15-57).

5. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stein et al. (US Patent 5071491) in view of Kataoka et al. (US Patent 6320115) and further in view of Kirchmann et al. (US Patent 6073936) .

Stein et al. and Kataoka et al. teach a solar module edge face sealing member as described in claim 8.

Neither Stein et al. nor Kataoka et al. teach using polypropylene resin such as PP-EPDM or polyesterenic resin such as polystyrene-isoprene for sealing member.

Kirchmann et al. et al teach using SIS (a polystyrene-isoprene blend) and EPDM/PP (a polypropenic resin). (See col. 4 lines 4-16).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the module of Stein et al. and Kataoka et al. by using SIS or PP-EDPM for edge face sealing member as taught by Kirchmann et al., because it would provide a sealing with flexibility or elastic characteristic. (See '936 col. 3 lines 3-5 and col. 4 lines 4-16).

6. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stein et al. (US Patent 5071491) in view of Kataoka et al. (US Patent 6320115) and Kirchmann et al. (US Patent 6073936) as applied to claim 9, and further in view of Kotani et al. (US Patent 5414030).

Art Unit: 1753

Stein et al., Kataoka et al. and Kirchmann et al. teach a solar cell module edge face sealing as described in claim 9.

Neither Stein et al., Kataoka et al. nor Kirchmann et al. teach using additive such as magnesium silicate or ultraviolet-resistant agents.

Regarding claim 11-12, Kotani et al. teach using magnesium silicate to an elastomer resin. (See col. 14 lines 39-68).

Regarding claim 13, Kotani et al. teach using ultraviolet absorbers, or an ultraviolet-resistant agent to an elastomeric resin. (See col. 11 lines 36-43 and col. 13 lines 22-31).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Stein et al., Kataoka et al. and Kirchmann et al. by adding additives such as magnesium silicate and ultraviolet-resistant agent as taught by Kotani et al., because it would improve weather resistance. (See col. 13 lines 22-31)

7. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stein et al. (US Patent 5071491) in view of Hatsukaiwa et al (PGPub 20030034064).

Stein et al. disclose a solar cell module edge face sealing member as described in claim 1, wherein the edge portions of the edge face sealing member have angularly grooves. (See '491 Figure 7)

Stein et al. do not specifically teach the edge portions of the side sealing region are curved, nor do they teach the edge portions of the side sealing region have chamfered surfaces.

Regarding claim 16, Hatsukaiwa et al. teach the edge portions of the side sealing region of a solar cell module edge face sealing member (64a) are curved. (See '064 Figure 22)

Regarding claim 17, Hatsukaiwa et al. teach the edge portions of the side sealing region of a solar cell module edge face sealing member (64a) have chamfered surfaces. (See '064 Figure 22).

It would have been obvious to one ordinary skill in the art at the time the invention was made to modify the edge face sealing member of Stein et al. by having the edge portions of the side sealing curved or chamfered as taught by Hatsukaiwa et al., because a curved or chamfered surface of the edge portion of the edge sealing member is a matter of design choice.

8. Claims 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stein et al. (US Patent 5071491) in view of Hatsukaiwa et al (PGPub 20030034064).

Stein et al. disclose a solar cell module edge face sealing member comprising a solar cell module body (25) adapted to be provided in a frame body (metallic frame 24), an edge face sealing member (seal 26 and insulation 27) located between the frame body (24) and the solar cell module body (25) to seal the gap between the frame body and the solar cell module body. The edge face sealing member (26 and 27) is frame-like

Art Unit: 1753

in shape, formed in a substantially parallel fashion with respect to one or more outer shape of the solar cell module body (25), encapsulating the solar cell module body along substantially the entire edge portion perimeter of the solar cell module. The edge face sealing member is substantially U-shaped. Each of the sidewalls of the edge face sealing member includes a distal end tip portion that is angled inwardly toward the solar cell module body relative to a main body of the sidewall. (See Figure 7).

Stein et al. do not specifically teach the first and second sidewalls connected to each other via a bottom wall.

Hatsukaiwa et al. teach the sidewalls of an edge face sealing member (64a) connected to each other via a bottom wall. (See Figure 22).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the edge face sealing of Stein et al. by having the sidewalls connected via the bottom wall as taught by Hatsukaiwa et al., because it would provide a proper fixing means and a protection from environmental elements. (See paragraphs [0095] and [0104])

9. Claims 1, 3-6, 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080) or Hatsukaiwa et al. (PGPub 20030034064)

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

Art Unit: 1753

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

As seen in Figures 1 and 4A-B, Yoda et al. disclose a solar cell module edge face sealing member (4) for sealing one or more gaps between at least one of the solar cell module body (8) and at least one of the frame body (51), wherein the solar cell module body (8) is captured within frame body (51). The edge face sealing member being frame-like in shape and formed in substantially parallel fashion with respect to one or more outer shapes of the solar cell module body (See Figures 1 and 4B). The edge face sealing member is substantially C-shaped in cross section or substantially U-shaped in cross section (See Figure 4B). The edge face sealing member (4) comprises upper sealing regions abutting front surface (exposed surface of front cover 1) of the solar cell module body (8), lower sealing regions abutting back surface (exposed surface of back cover 3) of the solar cell module body (8), side sealing regions abutting the edge face of the solar cell module body (8), wherein the surface of the upper sealing region and the surface of the lower sealing region face each other. (See Figure 4B). The upper sealing region and the lower sealing region being disposed so as to open to the outside therefrom at either side from the edge portions of the side sealing region. The edge face sealing member (4) captures the solar cell module body (8) along substantially the entire edge portion perimeter, and is captured within the frame body

Art Unit: 1753

(51). (See Figures 1 and 4B). Yoda et al. also teach the distance between the tip portions is substantially the same as the thickness of the edge portion of the solar cell body. (See Figure 4B).

With respect to claim 3, Yoda et al. teach one of the lower sealing region is longer than one of the upper sealing region. (See Figure 4B)

Yoda et al. do not teach the tip portions of the upper sealing regions and lower sealing region formed in a bent fashion toward a groove recess, nor do they teach forming projection on each of the facing surfaces of the lower and upper sealing regions.

With respect to claims 1 and 6, Meadows teaches an edge face sealing member (11) having the tip portions (22 and 23) of the upper and lower sealing regions formed in a bent fashion toward a groove recess. (See '080 Figures 2-3). Hatsukaiwa et al. also teach an edge face sealing member (gasket 64a) having the tip portions of the upper and lower sealing regions formed in a bent or inclined fashion toward a groove recess. (See '064 Figure 22).

With respect to claim 4, Meadows teaches an edge face sealing member (11) having projections (24 and 25) formed on each facing surfaces of the upper and lower regions. (See '080 Figures 2-3). Hatsukaiwa et al. also teach an edge face sealing member (gasket 64a) having projections formed on each facing surfaces of the upper and lower regions. (See '064 Figure 22).

With respect to claim 5, Meadows teaches an edge face sealing member (11) having projections with multiple-rib regions (3 ribs on each surface of the upper and

Art Unit: 1753

lower sealing regions) formed in parallel fashion. (See '080 Figures 2-3). Hatsukaiwa et al. also teach an edge face sealing member (gasket 64) having projection with single-rib regions (1 rib on each surface of the upper and lower sealing regions). (See '064 Figure 22)

With respect to claim 16, Meadows teaches an edge face sealing member (11) having the edge portions of the side sealing region are curved. (See '080 Figures 2-3). Hatsukaiwa et al. also teach an edge face sealing member (gasket 64a) having the edge portions of the side sealing region are curved. (See '064 Figure 22).

With respect to claim 17, Meadows teaches an edge face sealing member (11) with the edge portions of the side sealing regions having chamfered surfaces. (See '080 Figures 2-3). Meadows teaches an edge face sealing member (gasket 64a) with the edge portions of the side sealing regions having chamfered surfaces. (See '064 Figures 22)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the structure of Yoda et al. by substituting with the edge face sealing members as taught by Meadows or Hatsukaiwa et al. because it would provide a waterproof seal which prevent entrance of air, water or other fluids (See '080 col. 3 lines 35-39 or '064 paragraphs [0104] and [0141]).

10. Claim 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080) or

Art Unit: 1753

Hatsukaiwa et al. (PGPub 20030034064), and further in view of Kataoka et al. (US Patent 6320115).

Regarding claims 7-9, Yoda et al. in combination with either Meadows et al. or Hatsukaiwa et al. teach a solar cell module edge face sealing member as described in claim 1. Yoda et al. also teach the solar cell module body is laminated in order: front cover 1, filler 6a, solar cells 2, filler 6b and weather resistant back-surface (or back cover 3). (See '718 Figure 1 and col. 4 lines 48-67 bridging col. 5 lines 1-11). Yoda et al. further teach the edge face sealing member is made of elastomer resin such as EPDM (ethylene propylene diene monomer rubber), or a polypropylenic rubber. (See '718 col. 5 lines 1-11).

Yoda et al. do not specifically teach the front cover 1 is a glass surface, nor do they teach the fillers (6a and 6b) are made of EVA.

Kataoka et al. teach using glass as a front cover 503 (See col. 13 lines 18-35), and EVA filled between the cover and solar cells. (See Figure 5 and col. 10 lines 46-67, col. 14 lines 15-28)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the solar cell module body of Yoda et al. and by using glass as a front cover and filling EVA between solar cells and covers as taught by Kataoka et al., because it would give an excellent cover layer with weatherability, water repellency, heat resistance and excellent filler for protection, adhesion and durability. (See col. 10 lines 48-67, col. 13 lines 18-35 and col. 14 lines 15-57).

Art Unit: 1753

11. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080) or Hatsukaiwa et al. (PGPub 20030034064) and Kataoka et al. (US Patent 6320115) as applied to claim 9, and further in view of Kirchmann et al. (US Patent 6073936).

Yoda et al., Meadows (or Hatsukaiwa et al.) and Kataoka et al. teach a solar cell module edge face sealing as described in claim 9. Neither of them teach the edge face sealing member made of PP-EPDM copolymer or polystyrene-isoprene.

Kirchmann et al. teach the using SIS (a polystyrene-isoprene blend) and EPDM/PP (a polypropylenic copolymer). (See col. 4 lines 4-16).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the edge face sealing member of Yoda et al., Meadows (or Hatsukaiwa et al.) and Kataoka et al. by using polystyrene-isoprene blend or EPDM/PP for the edge face sealing member, because it would provide a seal with flexibility or having an elastic characteristic. (See '936 col. 3 lines 3-5 and col. 4 lines 4-16).

12. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080) or Hatsukaiwa et al. (PGPub 20030034064) and Kataoka et al. (US Patent 6320115) as applied to claim 9, and further in view of Kotani et al. (US Patent 5414030).

Yoda et al., Meadows (or Hatsukaiwa et al.) and Kataoka et al. teach a solar cell module edge face sealing as described in claim 9.

Neither Yoda et al., Meadows, Hatsukaiwa et al. nor Kataoka et al. teach using additive such as magnesium silicate or ultraviolet-resistant agents.

Regarding claim 11-12, Kotani et al. teach using magnesium silicate to an elastomer resin. (See col. 14 lines 39-68).

Regarding claim 13, Kotani et al. teach using ultraviolet absorbers, or an ultraviolet-resistant agent to an elastomeric resin. (See col. 11 lines 36-43 and col. 13 lines 22-31).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Yoda et al., Meadows (or Hatsukaiwa et al.) and Kataoka et al. by adding additives such as magnesium silicate and ultraviolet-resistant agent as taught by Kotani et al., because it would improve weather resistance. (See col. 13 lines 22-31)

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080) or Hatsukaiwa et al. (PGPub 20030034064)

As seen in Figures 1 and 4A-B, Yoda et al. disclose a solar cell module comprising an edge face sealing member (4), a solar cell module body (8) captured within the frame body (51). The edge face sealing member being frame-like in shape, and substantially C-shaped in cross section or substantially U-shaped in cross section (See Figure 4B). The edge face sealing member (4) comprises upper sealing regions abutting front surface (exposed surface of front cover 1) of the solar cell module body

Art Unit: 1753

(8), lower sealing regions abutting back surface (exposed surface of back cover 3) of the solar cell module body (8), side sealing regions abutting the edge face of the solar cell module body (8), wherein the upper sealing region and the lower sealing region are disposed so as to open to the outside therefrom at either side from the edge portions of the side sealing region. The edge face sealing member (4) captures the solar cell module body (8) along substantially the entire edge portion perimeter, and is captured within the frame body (51). (See Figures 1 and 4B). Yoda et al. also teach the distance between the tip portions is substantially the same as the thickness of the edge portion of the solar cell body. (See Figure 4B).

Yoda et al. do not teach the tip portions of the upper sealing regions and lower sealing region formed in a bent fashion toward a groove recess.

With respect to claims 1 and 6, Meadows teaches an edge face sealing member (11) having the tip portions (22 and 23) of the upper and lower sealing regions formed in a bent fashion toward a groove recess. (See '080 Figures 2-3). Hatsukaiwa et al. also teach an edge face sealing member (gasket 64a) having the tip portions of the upper and lower sealing regions formed in a bent or inclined fashion toward a groove recess. (See '064 Figure 22).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the edge face sealing member of Yoda et al. by substituting with the edge face sealing members as taught by Meadows or Hatsukaiwa et al. because it would provide a waterproof seal which prevent entrance of air, water or other fluids (See '080 col. 3 lines 35-39 or '064 paragraphs [0104] and [0141]).

14. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080) or Hatsukaiwa et al. (PGPub 20030034064), and further in view of Kataoka et al. (US Patent 6320115).

Regarding claim 15, Yoda et al. in combination with either Meadows et al. or Hatsukaiwa et al. teach a solar cell module edge face sealing member as described in claim 1. Yoda et al. also teach the solar cell module body is laminated in order: front cover 1, filler 6a, solar cells 2, filler 6b and weather resistant back-surface (or back cover 3). (See '718 Figure 1 and col. 4 lines 48-67 bridging col. 5 lines 1-11).

Yoda et al. do not specifically teach the front cover 1 is a glass surface, nor do they teach the fillers (6a and 6b) are made of EVA.

Kataoka et al. teach using glass as a front cover 503 (See col. 13 lines 18-35), and EVA filled between the cover and solar cells. (See Figure 5 and col. 10 lines 46-67, col. 14 lines 15-28)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the solar cell module body of Yoda et al. and by using glass as a front cover and filling EVA between solar cells and covers as taught by Kataoka et al., because it would give an excellent cover layer with weatherability, water repellency, heat resistance and excellent filler for protection, adhesion and durability. (See col. 10 lines 48-67, col. 13 lines 18-35 and col. 14 lines 15-57).

15. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080) or Hatsukaiwa et al. (PGPub 20030034064), and further in view of Stein et al. (US Patent 5071491).

Regarding claim 18, Yoda et al. and Meadows or Hatsukaiwa et al. teach a solar cell module as described in claim 1. Both Meadows and Hatsukaiwa et al. teach the edge face sealing member further comprises projections extending inwardly. (See '080 Figures 2-3 and '064 Figure 22).

Neither Yoda et al., Meadows nor Hatsukaiwa et al. specifically teach the tip portions extend further inwardly than the projections.

Stein et al. teach an edge face sealing member (comprising seal 26 and insulation 27) having tip portions extend further inwardly than the projection. (See top seal 26 in Figure 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the sealing of Meadows (or Hatsukaiwa et al.) by having the tip portions extend inwardly further than the projections as taught by Stein et al., because it would provide a frame that can serve as edge protection, increasing mechanical stability, protection against moisture and provide local fastening of solar cell equipment. (See col. 1 lines 9-15)

16. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080).

Regarding claim 19, as seen in Figures 1 and 4A-B, Yoda et al. disclose a solar cell module edge face sealing member structure comprising a solar cell module body (8) adapted to be located partially between the frame (51), an edge face sealing member (4) adapted to be located between the frame body and the solar cell module body for sealing gaps between the frame body and the solar cell module body. The edge face sealing member is frame-like in shape, formed substantially parallel fashion with respect to the outer shapes of the solar cell module body and encapsulates the solar cell module body along substantially the entire edge portion perimeter of the solar cell module body (See Figure 1). The edge face sealing member is substantially U-shaped and has first and second sidewalls connected to each other via a bottom wall. (See Figure 4B).

Yoda et al. do not teach each of the side wall includes a distal end tip portion that is angled relative to a main body of the sidewall so that the tip portions angle inwardly toward and contact the solar cell module body.

Meadows teaches an edge face sealing member having each sidewall includes a distal end tip portion that is angled relative to a main body of the sidewall so that the tip portions angle inwardly toward and contact glass pane.²⁷ (See Figures 2 and 3 of Meadows)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the structure of Yoda et al. by using the edge face sealing member as taught by Meadows because it would provide a seal which prevent entrance of air, water or other fluids. (See col. 3 lines 35-39).

Response to Arguments

Applicant's arguments filed 06/26/2007 have been fully considered but they are not persuasive.

Applicant argues that Yoda fail to disclose or suggest the limitation "tip portions of the upper sealing region and the lower sealing region are formed in a bent fashion so as to be inclined toward a groove recess, and wherein a distance between the tip portions is substantially the same as or is somewhat less than a thickness of the edge portion of the solar cell module body or bodies" in claims 1 and 14, and that the edge face sealing of Meadows cannot be applied to a solar module. It is true that Yoda et al. do not teach the tip portions formed in a bent fashion. However both Meadows and Hatsukiawa et al. teach the tip portions of an edge face sealing member are formed in a bent fashion. (See Figures 2-3 of Meadows, Figure 22 of Hatsukiawa et al. and the rejection above). The combination of teachings of Yoda et al. and either Meadows or Hatsukiawa et al. is proper since they all teach about an edge face sealing member, which is used for protection against weather elements. Therefore the edge face sealings taught by Yoda et al., Meadows and Hatsukiawa et al. are functionally equivalent, analogous and applicable or combinable under Section 103(a).

Applicant also argues Yoda et al. fail to disclose the limitation "the edge face sealing member is substantially U-shaped and has first and second sidewalls which are connected to each other via a bottom wall, and wherein each of the sidewall includes a distal end tip portion that is angled relative to a main body of the sidewall so that the tip

Art Unit: 1753

portions angle inwardly toward and contact the solar cell module body when the solar cell module body and edge face sealing member are in a state where they have not yet been provided in the frame body" in claim 19. Applicant further argues Meadows and Yoda are not properly combinable under Section 103(a). The Examiner respectfully disagrees, Meadows teaches said limitation and the references to Meadows and Yoda et al. are combinable under 103(a), since they are functionally equivalent as explained above.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh-Truc Trinh whose telephone number is 571-272-6594. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1753

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